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09/678,480	10/02/2000	Luis Aldaz	us 008631	6192

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EXAMINER

ODOM, CURTIS B

ART UNIT

PAPER NUMBER

2634

DATE MAILED: 06/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/678,480	ALDAZ ET AL.
Examiner	Art Unit	
Curtis B. Odom	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

Disposition of Claims

4) Claim(s) 1-54 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) Claim(s) _____ is/are allowed.
6) Claim(s) 1-54 is/are rejected.
7) Claim(s) _____ is/are objected to.
8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 02 October 2000 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: delay 128, time 122a, time 122b, and threshold 126 (see page 5). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: Fig. 1C, elements 1002, 1004, and 1006. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:
 - a. On page 14, line 2, the word “antennae” is suggested to be changed to “antennae 202”.

- b. On page 15, line 17, the word “satiates” is suggested to be changed to “does not satiate”.
- c. Throughout the specification, starting on page 16, line 26, “promotion 420” is suggested to be changed to “promotion 410”.

Appropriate correction is required.

Claim Objections

- 4. Claims 1-54 are objected to because of the following informalities:
 - a. In claim 1, line 4, the phrase “multipath signals said wireless” is suggested to be changed to “multipath signals at said wireless”.
 - b. In claim 1, line 7, the phrase “ratio level” is suggested to be changed to “level”.
 - c. In claims 1, 19, and 37, the phrase “said one of said one of said multipath signals” is suggested to be changed to “said one of said multipath signals”.
 - d. In claims 8, 26, and 44, delete “f”.
 - e. In claim 12, the phrase “claim 10” is suggested to be changed to “claim 11”.
 - f. In claims 15, 33, and 51, the phrase “step b)” is suggested to be changed to “step g)”.
 - g. In claims 17, 35, and 53, “j)” is suggested to be changed to “k)”.
 - h. In claim 18, “f” is suggested to be changed to “k)”.
 - i. In claims 20-36, the word “method” is suggested to be changed to “device”.

- j. In claims 38-54, the word "method" is suggested to be changed to "computer readable medium".
- k. In claim 30, the phrase "claim 28" is suggested to be changed to "claim 29".
- l. In claim 48, the phrase "claim 46" is suggested to be changed to 'claim 47".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-8, 10-14, and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Daudelin (U. S. Patent No. 6,072, 807)

Regarding claim 1, Daudelin discloses a method of managing fingers for multipath signals in a wireless communication device (Fig. 4), the method comprising the steps of: receiving (Fig. 4, block 401, column 4, lines 15-22) the multipath signals at the wireless communication device; acquiring (Fig. 4, block 411, column 4, lines 33-40) one the multipath signals in a searcher portion of the wireless communication device;

determining (column 4, line 65-column 5, line 3) a SNR level of the one of the multipath signals, wherein determining a constituent signals includes a signal quality measurement (including SNR) to identify a constituent signal (column 2, lines 5-45);

evaluating (Fig. 6, column 7, lines 24-50) the one of the multipath signals for categorization into one of a plurality of states, wherein the states are as follows: 1) the signal quality is above an assignment or re-establishment threshold; 2) the signal quality is below a de-assignment threshold; and 3) the signal quality is below an assignment or re-establishment threshold, but above a de-assignment threshold;

generating (Fig. 4, blocks 404 and 411, column 6, lines 44-49) a finger assignment by selectively providing the one of the multipath signals for a demodulation operation based upon its state

receiving (Fig. 4, block 404 and 411, column 4, line 65-column 5, line 45) the finger assignment from the searcher portion of the communication device;

determining (column 5, lines 4-7) a signal-strength of the finger assignment, wherein signal quality is a measure of signal strength (column 2, lines 12-15);

enabling (Fig. 4, block 404, column 6, lines 36-49 and Fig. 6, column 7, lines 29-42) the finger assignment for a combine operation if the signal strength for the finger assignment satiates a first signal-strength threshold (re-establishment threshold), wherein re-entering the assigned state enables the finger assignment for a combine operation (column 5, lines 4-7);

preventing (Fig. 4, block 410, column 7, lines 2-9) the finger assignment from being deassigned if the signal-strength of the finger assignment satiates a second threshold (de-

assignment threshold) the second signal-strength threshold being less than the first signal-strength threshold (Fig. 6, column 7, lines 21-50).

Regarding claim 2, which inherits the limitations of claim 1, Daudelin discloses the plurality of states includes three hierarchical states (Fig. 6, column 7, lines 24-50), wherein the states are as follows: 1) the signal quality is above an assignment or re-establishment threshold; 2) the signal quality is below a de-assignment threshold; and 3) the signal quality is below an assignment or re-establishment threshold, but above a de-assignment threshold.

Regarding claim 3, which inherits the limitations of claim 1, Daudelin discloses the plurality of states includes an assigned state, wherein the signals associated with the assigned state are used for an active demodulation (column 5, lines 4-7), wherein in the assigned state the signal quality is above an assignment or re-establishment threshold (column 7, lines 24-50);

Regarding claim 4, which inherits the limitations of claim 1, discloses the plurality of states includes a potential state, wherein the signals associated with the potential state are not actively used for an active demodulation operation, but which may likely be candidates for a future demodulation operation (Fig. 6, column 7, lines 30-37), wherein in the potential state, the signal quality is below an assignment or re-establishment threshold, but above a de-assignment threshold as increasing towards a an assignment or re-establishment threshold.

Regarding claim 5, which inherits the limitations of claim 1, discloses the plurality of states includes a temporary state, wherein the signals associated with the temporary state are not actively used for an active demodulation operation, but which may likely be candidates for categorization in a potential state in a future evaluation (Fig. 6, column 7, lines 30-34), wherein in a temporary state the signal quality is below a de-assignment threshold.

Regarding claim 6, which inherits the limitations of claim 1, Daudelin discloses the multipath signal is categorized into a state according to SNR level of the multipath signal (column 7, lines 24-50), wherein signal quality can be SNR (column 2, lines 12-15).

Regarding claim 7, which inherits the limitations of claim 1, Daudelin discloses the multipath signal is categorized into a state according to a time period over which the SNR level of the multipath signal exists (Fig. 6, column 7, lines 24-50).

Regarding claim 8, which inherits the limitations of claim 3, Daudelin discloses enabling the multipath signal for demodulation if it is categorized in the assigned state (column 5, lines 4-7), wherein in the assigned state the signal quality is above an assignment or re-establishment threshold (column 7, lines 24-50).

Regarding claim 10, which inherits the limitations of claim 1, Daudelin discloses determining a time period over which the signal-strength of the finger assignment satiates the second threshold (Fig. 6, column 7, lines 24-50), wherein the time period is $t_{r1}-t_{r2}$.

Regarding claim 11, which inherits the limitations of claim 10, Daudelin discloses preventing the finger assignment from being deassigned if the time period satiates a time threshold (Fig. 6, column 7, lines 24-50), wherein the finger is prevented from being de-assigned if the time threshold Δt_{r1} is satisfied.

Regarding claim 12, which inherits the limitations of claim 11, Daudelin discloses allowing the finger assignment to be de-assigned if the finger assignment fails to satiate the time threshold, wherein the finger assignment is de-assigned if Δt_{r2} is not satisfied.

Regarding claim 13, which inherits the limitations of claim 1, Daudelin discloses allowing the finger assignment to be de-assigned if the finger assignment fails to satiate the second signal-strength threshold (column 7, lines 2-10).

Regarding claim 14, which inherits the limitations of claim 1, Daudelin discloses demodulating the finger assignment (column 5, lines 4-7).

Regarding claim 16, which inherits the limitations of claim 1, Daudelin discloses categorizing the finger assignment into one of a plurality of states based upon the signal-strength of the finger assignment (column 7, lines 24-50), wherein the states are assigned, reserved, and inactive.

Regarding claim 17, which inherits the limitations of claim 10, Daudelin further discloses categorizing the finger assignment into one of a plurality of states based upon the signal-strength of the finger assignment and based upon the time period over which the signal strength exists (column 7, lines 24-50).

Regarding claim 18, which inherits the limitations of claim 16, Daudelin discloses evaluating the finger assignment for the combine operation or for de-assignment based upon its state (column 5, lines 4-7 and 36-56).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daudelin (U. S. Patent No. 6, 072, 807).

Regarding claim 9, which inherits the limitations of claim 1, Daudelin does not disclose the steps of claim 1 are repeated to provide a quantity of multipath signals at least equivalent to a number of fingers in a receive portion of the wireless communication device. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include this feature because the more signals used for combination, the better the estimate of the transmitted signal in the receiver (column 6, lines 36-42). Thus, claim 9 does not constitute patentability.

Regarding claim 15, which inherits the limitations of claim 1, Daudelin does not disclose filtering the signal-strength of the finger assignment. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include this feature because filtering would remove unwanted noise and interference and allow a more efficient processing of the signal. Thus, filtering a signal does not constitute patentability.

9. Claims 19-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daudelin (U.S. Patent No. 6, 072, 807) in view of Langberg et al. (U.S. Patent No. 5, 852, 630).

Regarding claim 19, Daudelin discloses all of the subject matter of claim 19 as described in the previous rejection (see rejection of claim 1) including a wireless communication device (Fig. 4) for managing multipath signals and for managing finger assignment, the communication device comprising:

a searcher (Fig. 4, block 411) adapted to scan for multipath signals;

a transceiver coupled to the searcher (Fig. 4, block 407);
a processor (column 4, block 404), the processor coupled to the searcher; and
a device (Fig. 4, block 400) to performs the steps of:
receiving (Fig. 4, block 401, column 4, lines 15-22) the multipath signals at the wireless communication device;
acquiring (Fig. 4, block 411, column 4, lines 33-40) one the multipath signals in a searcher portion of the wireless communication device;
determining (column 4, line 65-column 5, line 3) a SNR level of the one of the multipath signals, wherein determining a constituent signals includes a signal quality measurement (including SNR) to identify a constituent signal (column 2, lines 5-45);
evaluating (Fig. 6, column 7, lines 24-50) the one of the multipath signals for categorization into one of a plurality of states, wherein the states are as follows: 1) the signal quality is above an assignment or re-establishment threshold; 2) the signal quality is below a de-assignment threshold; and 3) the signal quality is below an assignment or re-establishment threshold, but above a de-assignment threshold;
generating (Fig. 4, blocks 404 and 411, column 6, lines 44-49) a finger assignment by selectively providing the one of the multipath signals for a demodulation operation based upon its state
receiving (Fig. 4, block 404 and 411, column 4, line 65-column 5, line 45) the finger assignment from the searcher portion of the communication device;
determining (column 5, lines 4-7) a signal-strength of the finger assignment, wherein signal quality is a measure of signal strength (column 2, lines 12-15);

enabling (Fig. 4, block 404, column 6, lines 36-49 and Fig. 6, column 7, lines 29-42) the finger assignment for a combine operation if the signal strength for the finger assignment satiates a first signal-strength threshold (re-establishment threshold), wherein re-entering the assigned state enables the finger assignment for a combine operation (column 5, lines 4-7);

preventing (Fig. 4, block 410, column 7, lines 2-9) the finger assignment from being deassigned if the signal-strength of the finger assignment satiates a second threshold (de-assignment threshold) the second signal-strength threshold being less than the first signal-strength threshold (Fig. 6, column 7, lines 21-50).

Daudelin does not disclose steps of the method are written as a computer program product with a computer readable storage medium.

However, Langberg et al. teaches that the method and apparatus for a transceiver warm start activation procedure with precoding can be implemented in software stored in a computer-readable medium. The computer readable medium is an electronic, magnetic, optical, or other physical device or means that can contain or store a computer program for use by or in connection with a computer-related system or method (note column 3, lines 51-65). One skilled in the art at the time the invention was made would have clearly recognized that the method of Daudelin would have been implemented into software. The implemented software would perform the same function of the hardware for less expense, greater adaptability, and greater flexibility. Therefore, it would have been obvious to have used the software in Daudelin as taught by Langberg et al. in order to reduce cost and improve the adaptability and flexibility of the communication system.

Regarding claims 20-36, which depend on claim 19, the claimed device includes features corresponding to the above rejection of claims 2-18 which is applicable hereto.

Regarding claims 37-54, Daudelin discloses all of the subject matter as described in the previous rejection (see rejection of claims 1-18), except for the method written as a computer program product with a computer readable storage medium.

However, Langberg et al. teaches that the method and apparatus for a transceiver warm start activation procedure with precoding can be implemented in software stored in a computer-readable medium. The computer readable medium is an electronic, magnetic, optical, or other physical device or means that can contain or store a computer program for use by or in connection with a computer-related system or method (note column 3, lines 51-65). One skilled in the art at the time the invention was made would have clearly recognized that the method of Daudelin would have been implemented into software. The implemented software would perform the same function of the hardware for less expense, greater adaptability, and greater flexibility. Therefore, it would have been obvious to have used the software in Daudelin as taught by Langberg et al. in order to reduce cost and improve the adaptability and flexibility of the communication system.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Eberhardt et al. (U. S. Patent No. 5, 754, 583) discloses assigning and de-assigning rake fingers depending first and second thresholds.

Bi et al. (U. S. Patent No. 6, 515, 977) discloses de-assigning rake fingers depending on signal quality threshold and a time threshold.

Newson et al. (U. S. Patent No. 6, 370, 183) discloses assigning rake fingers depending on the state of the finger.

Tran (U. S. Patent No. 6, 269, 075) discloses assigning rake fingers in a CDMA receiver.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 703-305-4097. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Curtis Odom
April 28, 2004

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